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Patent Claims

- 5 1. A stabilizing device for stabilizing a vehicle (10) with regard to driving dynamics
- having presetting means (41) for determining a setpoint yaw rate signal (49) and having
  - limiting means (45) for determining a limiting yaw
  - 10 rate signal (50) which represents a maximum yaw rate of the vehicle (10) in such a way that the vehicle (10) remains stable while taking into account the maximum yaw rate, and for limiting the setpoint yaw rate signal (49) to the limiting yaw rate signal (50) when the
  - 15 value of the setpoint yaw rate signal (49) exceeds the value of the limiting yaw rate signal (50), characterized
  - in that said stabilizing device has actual value means (53) for making available a tilt angle signal
  - 20 (56) which represents the current tilt angle of the vehicle (10),
  - in that the limiting means (45) contain tilt angle means (46) for determining the limiting yaw rate signal (50) by reference to the tilt angle signal (56), and
  - 25 - in that said stabilizing device has generating means (42) for generating a steering intervention signal and/or at least one braking intervention signal by reference to the limited setpoint yaw rate signal (49).
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2. The stabilizing device as claimed in claim 1, characterized in that the limiting means (45) are designed to select the setpoint yaw rate signal (49) and the limiting yaw rate signal (50) as an input
- 35 signal for the generating means (42), in which case the setpoint yaw rate signal (49) is selected if its value does not exceed the value of the limiting yaw rate signal (50) and otherwise the limiting yaw rate signal

(50) is selected.

3. The stabilizing device as claimed in claim 1 or 2, characterized in that the actual value means (53) are  
5 designed to make available an attitude angle signal which represents the current attitude angle of the vehicle (10), in that the limiting means (45) contain attitude angle means (47) for determining a second limiting yaw rate signal (51) by reference to the  
10 attitude angle signal, and in that the limiting means (45) are designed to limit the setpoint yaw rate signal (49) to the value of the first limiting yaw rate signal (50) made available by the tilt angle means or the second limiting yaw rate signal (51) made available by  
15 the attitude angle means, when the value of the setpoint yaw rate signal (49) exceeds the value of the first or second limiting yaw rate signal (50, 51).

4. The stabilizing device as claimed in claim 3,  
20 characterized in that the limiting means (45) are designed to select the setpoint yaw rate signal (49) and the first or second limiting yaw rate signal (50, 51) as an input signal for the generating means (42), in which case the yaw rate signal with the lowest  
25 value is selected as the input yaw rate signal.

5. The stabilizing device as claimed in one of the preceding claims, characterized in that the presetting means (41) are based on at least one reference model of  
30 the vehicle (10).

6. The stabilizing device as claimed in one of the preceding claims, characterized in that the yaw rate signals (49 - 51) are dependent on the direction of  
35 rotation.

7. The stabilizing device as claimed in one of the preceding claims, characterized in that the actual

value means (53) contain measuring means (43) and/or estimating means (44).

8. The stabilizing device as claimed in claim 3,  
5 characterized in that the estimating means (44) contain an observer.

9. The stabilizing device as claimed in one of the preceding claims, characterized in that the actual  
10 value means (53), in particular the estimating means (44) of the actual value means (53), are connected directly to the generating means (42), in which case the actual value means (53) make available input values for the generating means (42) and/or the generating  
15 means (42) make available input values for the actual value means (53).

10. The stabilizing device as claimed in one of the preceding claims, characterized in that the limiting  
20 means (45) for determining the limiting yaw rate signals (50) are designed in such a way that the vehicle (10) does not roll over while taking into account the maximum yaw rate.

25 11. The stabilizing device as claimed in one of the preceding claims, characterized in that said stabilizing device has program code which can be executed by means of a control means, in particular a processor, a driving stability controller and/or a  
30 steering controller of the vehicle (10).

12. A single-track or multitrack vehicle (10) having at least one stabilizing device (25) as claimed in one of the preceding claims, having actual value means (53)  
35 and/or sensors for generating a rolling rate signal and a presetting steering angle signal and having a steering actuator arrangement (40) which can be actuated by the stabilizing device (25) and has the

purpose of steering one or more wheels of an axle of the vehicle (10).

13. A method for stabilizing a vehicle (10) with  
5 regard to driving dynamics, having the steps:

- a setpoint yaw rate signal (49) is determined,
- a limiting yaw rate signal (50) which represents a maximum yaw rate of the vehicle (10) is determined in such a way that the vehicle (10) remains stable while  
10 taking into account the maximum yaw rate,
  - the setpoint yaw rate signal (49) is limited to the value of the limiting yaw rate signal (50) if the value of the setpoint yaw rate signal (49) exceeds the value of the limiting yaw rate signal (50),  
15 characterized in that
    - a tilt angle signal (56) which represents the current tilt angle of the vehicle (10) is determined,
    - the limiting yaw rate signal (50) is determined by reference to the tilt angle signal (56),  
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  - a steering intervention signal and/or at least one braking intervention signal are generated by reference to the limited setpoint yaw rate signal (49).